

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) An impeller of a centrifugal fan comprising:
a main plate configured to rotate around a rotating shaft, the main plate being constructed of resin material;
a plurality of hollow blades annularly disposed around the rotating shaft, each of the hollow blades including
a first surface portion integrally molded with or fixed to the main plate, the first surface portion being constructed of resin material, and
a second surface portion attached to the first surface portion to form a hollow space therebetween, the second surface portion being constructed of resin material; and
a side plate fixed to the first surface portions by laser welding, the side plate being constructed of resin material and being molded separately from the first surface portions, the hollow blades being disposed between the main plate and the side plate, the main plate, the hollow blades and the side plate being configured to take in a gas from a rotating shaft direction and blow out the gas in a direction intersecting the rotating shaft, each of the second surface portions forming at least part of a negative-pressure surface, and each of the first surface portions forming at least part of a positive pressure surface, the hollow blades including a blade shape retaining mechanism to prevent the second surface portions from being deformed toward outer peripheral sides of the second surface portions by a centrifugal force, [[and]]
each of the first surface portions having an edge portion extending from a side plate end thereof toward a respective one of the second surface portions, with each edge portion being laser welded to the side plate, and each edge portion having an end surface that abuts the respective one of the second surface portions at a side plate end thereof to form part of the blade shape retaining mechanism and to define a side plate end of the hollow space,

the side plate ends of the hollow spaces, the first surface portions and the second surface portions being disposed at ends of the blades closer to the side plate than the main plate, and
each blade having a leading rotational edge and a trailing rotational edge with the edge portion of the first side portion ~~the blade~~ extending between the leading and trailing rotational edges of the blade such that an interior surface of the edge portion faces the main plate with
through the hollow space of the blade disposed between the interior surface of the edge portion and the main plate, the hollow space having a length measured between the leading and trailing rotational edges of the blade, and the edge portion extending along a majority of the length of the
hollow space between the leading and trailing rotational edges of the blade.

2. (Currently Amended) An impeller of a centrifugal fan comprising:
a main plate configured to rotate around a rotating shaft, the main plate being constructed of resin material;
a plurality of hollow blades annularly disposed around the rotating shaft, each of the hollow blades including
a first surface portion integrally molded with or fixed to the main plate, the first surface portion being constructed of resin material, and
a second surface portion attached to the first surface portion to form a hollow space therebetween, the second surface portion being constructed of resin material; and
a side plate fixed to the first surface portions by laser welding, the side plate being constructed of resin material and being molded separately from the first surface portions,
the hollow blades being disposed between the main plate and the side plate,
the main plate, the hollow blades and the side plate being configured to take in a gas from a rotating shaft direction and blow out the gas in a direction intersecting the rotating shaft, and
the second surface portion being configured to remain attached to the first surface portion while a centrifugal force resulting from the rotation of the main plate acts on the first surface portion,
each of the first surface portions forming at least part of a positive pressure surface,

the hollow blades including a blade shape retaining mechanism to prevent the second surface portions from being deformed toward outer peripheral sides of the second surface portions by the centrifugal force, and

each of the first surface portions having an edge portion extending from a side plate end thereof toward a respective one of the second surface portions, with each edge portion being laser welded to the side plate, and each edge portion having an end surface that abuts the respective one of the second surface portions at a side plate end thereof to form part of the blade shape retaining mechanism and to define a side plate end of the hollow space,

the side plate ends of the hollow spaces, the first surface portions and the second surface portions being disposed at ends of the blades closer to the side plate than the main plate, and

each blade having a leading rotational edge and a trailing rotational edge with the edge portion of the first side portion the blade extending between the leading and trailing rotational edges of the blade such that an interior surface of the edge portion faces the main plate with through the hollow space of the blade disposed between the interior surface of the edge portion and the main plate, the hollow space having a length measured between the leading and trailing rotational edges of the blade, and the edge portion extending along a majority of the length of the hollow space between the leading and trailing rotational edges of the blade.

3. (Currently Amended) An impeller of a centrifugal fan comprising:
a main plate configured to rotate around a rotating shaft, the main plate being constructed of resin material;

a plurality of hollow blades annularly disposed around the rotating shaft, each of the hollow blades including

a first surface portion fixed to the main plate by laser welding, the first surface portion being constructed of resin material and being molded separately from the main plate, and

a second surface portion attached to the first surface portion to form a hollow space therebetween, the second surface portion being constructed of resin material; and

a side plate integrally molded with or fixed to the first surface portions, the side plate being constructed of resin material,

the hollow blades being disposed between the main plate and the side plate,
the main plate, the hollow blades and the side plate being configured to take in a gas from a rotating shaft direction and blow out the gas in a direction intersecting the rotating shaft,
each of the second surface portions forming at least part of a negative-pressure surface, and each of the first surface portions forming at least part of a positive pressure surface,
the hollow blades including a blade shape retaining mechanism to prevent the second surface portions from being deformed toward outer peripheral sides of the second surface portions by a centrifugal force, and
each of the first surface portions having an edge portion extending from a main plate end thereof toward a respective one of the second surface portions, with each edge portion being laser welded to the main plate, and each edge portion having an end surface that abuts the respective one of the second surface portions at a main plate end thereof to form part of the blade shape retaining mechanism and to define a main plate end of the hollow space,
the main plate ends of the hollow spaces, the first surface portions and the second surface portions being disposed at ends of the blades closer to the main plate than the side plate, and
each blade having a leading rotational edge and a rotational trailing edge with the edge portion of the first side portion ~~the blade~~ extending between the leading and trailing rotational edges of the blade such that an interior surface of the edge portion faces the side plate with ~~through~~ the hollow space of the blade disposed between the interior surface of the edge portion and the side plate, the hollow space having a length measured between the leading and trailing rotational edges of the blade, and the edge portion extending along a majority of the length of the hollow space between the leading and trailing rotational edges of the blade.

4. (Currently Amended) An impeller of a centrifugal fan comprising:
a main plate configured to rotate around a rotating shaft, the main plate being constructed of resin material;
a plurality of hollow blades annularly disposed around the rotating shaft, each of the hollow blades including
a first surface portion fixed to the main plate by laser welding, the first surface portion being constructed of resin material and being molded separately from the main plate, and

a second surface portion attached to the first surface portion to form a hollow space therebetween, the second surface portion being constructed of resin material; and

a side plate integrally molded with or fixed to the first surface portions, the side plate being constructed of resin material,

the hollow blades being disposed between the main plate and the side plate,

the main plate, the hollow blades and the side plate being configured to take in a gas from a rotating shaft direction and blow out the gas in a direction intersecting the rotating shaft, and

the second surface portion being configured to remain attached to the first surface portion while a centrifugal force resulting from the rotation of the main plate acts on the first surface portion,

each of the first surface portions forming at least part of a positive pressure surface,

the hollow blades including a blade shape retaining mechanism to prevent the second surface portions from being deformed toward outer peripheral sides of the second surface portions by the centrifugal force, and

each of the first surface portions having an edge portion extending from a main plate end thereof toward a respective one of the second surface portions, with each edge portion being laser welded to the main plate, and each edge portion having an end surface that abuts the respective one of the second surface portions at a main plate end thereof to form part of the blade shape retaining mechanism and to define a main plate end of the hollow space,

the main plate ends of the hollow spaces, the first surface portions and the second surface portions being disposed at ends of the blades closer to the main plate than the side plate, and

each blade having a leading rotational edge and a rotational trailing edge with the edge portion of the first side portion ~~the blade~~ extending between the leading and trailing rotational edges of the blade such that an interior surface of the edge portion faces the side plate with ~~through~~ the hollow space of the blade disposed between the interior surface of the edge portion and the side plate, the hollow space having a length measured between the leading and trailing rotational edges of the blade, and the edge portion extending along a majority of the length of the hollow space between the leading and trailing rotational edges of the blade.

5. (Cancelled)

6. (Previously Presented) The impeller of claim 1, wherein the side plate includes a material with a higher light transmittance than a material of the first surface portions.

7. (Previously Presented) The impeller of claim 1, further comprising a side plate-side guide mechanism to position the hollow blades in the side plate.

8. (Cancelled)

9. (Cancelled)

10. (Previously Presented) The impeller of claim 3, wherein the main plate includes a material with a higher light transmittance than a material of the first surface portions.

11. (Previously Presented) The impeller of claim 3, further comprising a main plate-side guide mechanism to position the hollow blades in the main plate.

12. (Cancelled)

13. (Withdrawn) The impeller of claim 1, wherein the second surface portions include plural concavo-convexities formed in surfaces of the second surface portions.

14. (Previously Presented) A centrifugal fan comprising:
the impeller of claim 1; and
a drive mechanism configured to rotate the main plate.

15. (Cancelled)

16. (Cancelled)
17. (Previously Presented) The impeller of claim 2, wherein the side plate includes a material with a higher light transmittance than a material of the first surface portions.
18. (Cancelled)
19. (Cancelled)
20. (Previously Presented) The impeller of claim 4, wherein the main plate includes a material with a higher light transmittance than a material of the first surface portions.
21. (Cancelled)
22. (Cancelled)
23. (Previously Presented) The impeller of claim 1, wherein the second surface portion is attached to the first surface portion by inserting a portion of the second surface portion into the first surface portion.
24. (Previously Presented) The impeller of claim 2, further comprising a side plate-side guide mechanism to position the hollow blades in the side plate.
25. (Previously Presented) The impeller of claim 4, further comprising a main plate-side guide mechanism to position the hollow blades in the main plate.
26. (Previously Presented) A centrifugal fan comprising:
the impeller of claim 2; and
a drive mechanism configured to rotate the main plate.

27. (Previously Presented) A centrifugal fan comprising:
the impeller of claim 3; and
a drive mechanism configured to rotate the main plate.
28. (Previously Presented) A centrifugal fan comprising:
the impeller of claim 4; and
a drive mechanism configured to rotate the main plate.
29. (Withdrawn) The impeller of claim 2, wherein
the second surface portions include plural concavo-convexities formed in surfaces of the
second surface portions.
30. (Withdrawn) The impeller of claim 3, wherein
the second surface portions include plural concavo-convexities formed in surfaces of the
second surface portions.
31. (Withdrawn) The impeller of claim 4, wherein
the second surface portions include plural concavo-convexities formed in surfaces of the
second surface portions.